Digital open solutions from DENTSPLY Implants offer promising change and opportunity

New solution combining SIMPLANT and ATLANTIS provides patients with fully individualised immediate restoration—in one visit

Fig. 1

_The dental implant market, from its clinical and laboratory procedures to its business models, is evolving rapidly. Digitalisation and prosthetically driven implant treatments are the main drivers of this progress, with guided surgery being key to unlocking digital potential. It allows clinicians to deliver implants according to plan, which in turn enables prosthetic results as planned. Following the demands of this fast-developing market, DENTSPLY Implants now offers a brand new solution that, for the first time, combines the advantages of SIMPLANT guided surgery and patient-specific ATLANTIS abutments for time-saving perfect aesthetic results.

A focus session titled "Prosthetically driven treatment planning and execution powered by computer guided surgery" was held in Belgium in early August 2013. Three prosthodontists with profound knowledge of digital dentistry (Dr Marcus Dagnelid, private practice in Gothenburg in Sweden; Dr David Guichet, private practice in Orange in the USA; and Dr Goran Benic, the University of Zurich in Switzerland) met to share their experiences and expectations for digital dentistry in general, and the innovative state-of-the-art solution from DENTSPLY Implants in particular. The clinicians had tried out the new solution in advance and, over the course of the session, they had the opportunity to discuss this new treatment option with their colleagues for the first time.

So, what is this solution all about? In order to provide dental clinics and laboratories with cutting-edge innovation, DENTSPLY Implants merged its world-recognised digital open solutions SIMPLANT

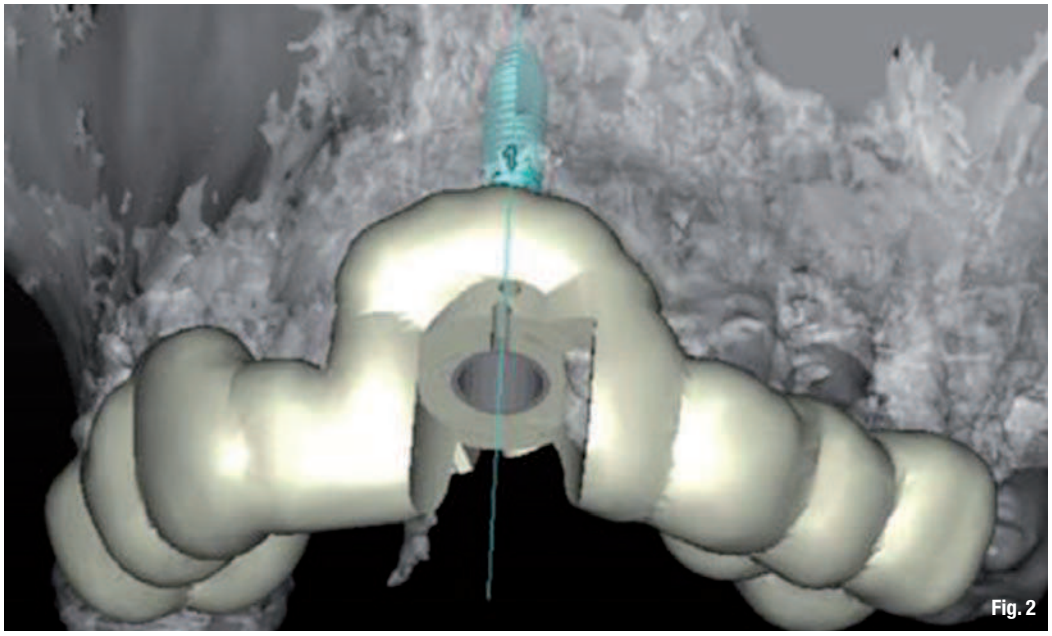
Fig. 2

Fig. 1_Clockwise from left: Dr David Guichet, Dr Marcus Dagnelid and Dr Goran Benic at the meeting in Leuven in Belgium.
Fig. 2_A preview of a SIMPLANT SAFE Guide in SIMPLANT 16. The slot in the guide indicates the correct rotational aspect of the implant.

and ATLANTIS. The new SIMPLANT 16 software combines the benefits of computer-guided surgery with patient-specific ATLANTIS abutment solutions, advancing surgery and restoration to a new level. It enables a completely digital process that stores all information without having to restart treatment again.

What does this mean for the clinician? The patient's data only has to be recorded once and can be used for everything, including reliable planning, safe execution of implant surgery, and creation of a patient-specific abutment and a CAD/CAM temporary crown. In other words, a SIMPLANT SAFE Guide, a patient-specific ATLANTIS abutment, and a temporary crown based on the ATLANTIS Abutment Core File can be ordered in one seamless step. This way, the patient can be treated in one treatment session and leave with a perfect temporary restoration.

In collaboration with the laboratory, the clinician gathers the digital data required, including the digital representation of the planned tooth, in the

Fig. 3_The unique SIMPLANT view allows the clinician to review the entire treatment plan digitally. Above is a review of an ATLANTIS abutment in the context of a digital wax-up.
Fig. 4_The alveolus after extraction of a central incisor.
Figs. 5a & b_An initial ATLANTIS abutment in titanium with a temporary crown (a). A final ATLANTIS abutment in gold-shaded titanium with a final crown (b).

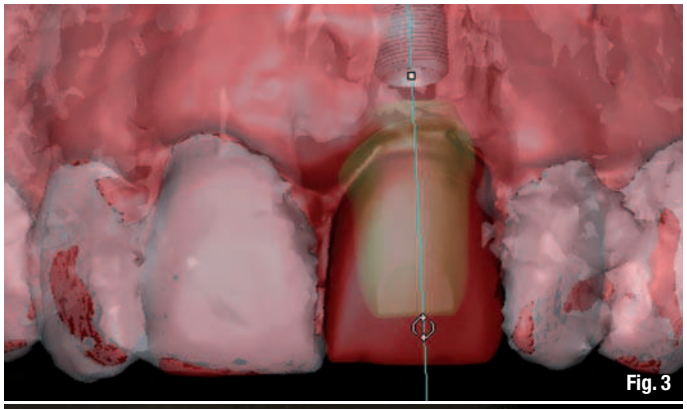
Fig. 3

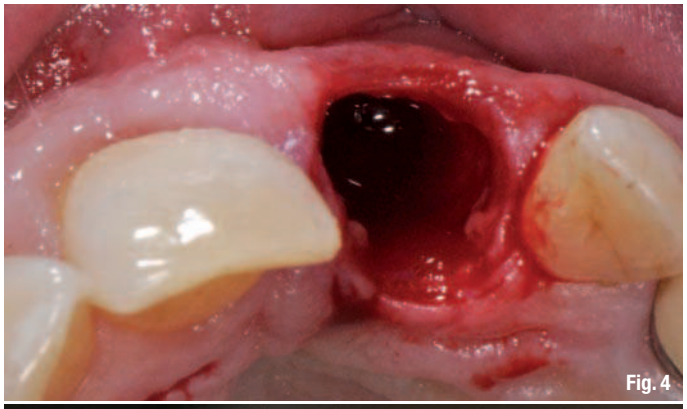
Fig. 4

Fig. 5a

Fig. 5b

Fig. 6

Fig. 7

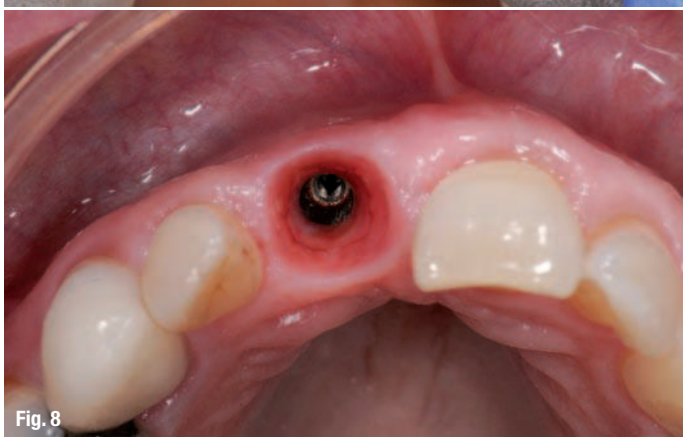
Fig. 8

Fig. 9

Fig. 6_A guide with a slot securely in place for implant placement.
Fig. 7_Treatment planning transferred to the patient's mouth in one session. The initial ATLANTIS abutment in titanium with a temporary crown is in place.
Fig. 8_Individualised guided healing at ten weeks.
Fig. 9_A perfect aesthetic result after seating of the final crown.

Clinical photographs courtesy of Dr Marcus Dagnelid.

SIMPLANT 16 software. The clinician can now plan the treatment and perform that treatment accurately on the patient. Once the planning for the implant has been performed, the data is sent to the design and production units, and the SIMPLANT surgical guide, the ATLANTIS abutment and the ATLANTIS Abutment Core File are designed. The clinician and the laboratory then have the opportunity to review and approve the designs before production starts.

In the hands of the clinician, the planned treatment is realised in an efficient and accurate way. In addition to the advantages offered by the guided surgery protocol and the immediate temporary restoration, the patient-specific abutment provides individualised soft-tissue contouring that starts immediately after surgery.

Ultimately, this goes beyond significant time-saving in treatment planning and implementation for the dental team and the patient. "For immediate loading, this is the highest quality you can get. The shape and strength of an ATLANTIS abutment are of much better quality than a PEEK chairside temporary abutment, thus creating the perfect emergence profile," Dagnelid said during the meeting.

The patient benefit is obvious: performing the implant procedure and the temporary restoration in just one session, as well as creating perfect conditions for individualised aesthetics. After healing, the clinical situation, including soft-tissue response, is evaluated. Based on clinical judgment, the initial ATLANTIS abutment is either retained, making it a final abutment, or changed to a new ATLANTIS abutment.

Great new insights on the new treatment concept for immediate restoration were certainly the highlight of the meeting in Leuven. Yet the meeting delivered much more than that. It was an inspirational forum with impressive exchange of knowledge and ideas about how to advance the product and process developments to provide clinicians and laboratories with the tools they need to perform prosthetically driven implant treatment: a complete digital workflow, starting with the digital scan and utilising digital processes and merged datasets for greater efficacy and accuracy.

Further focus sessions on where digital dentistry will lead us will follow._

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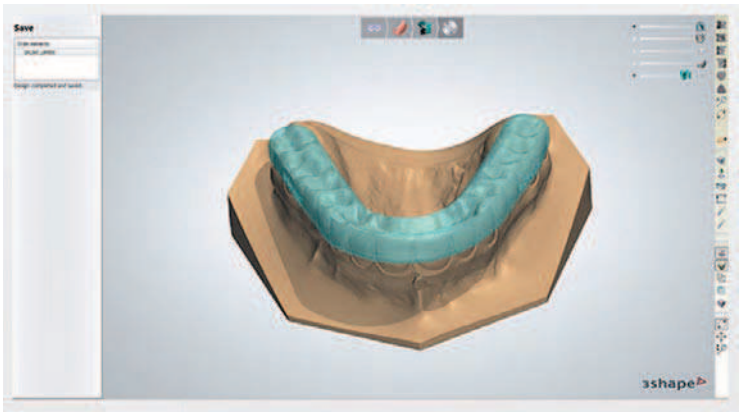
3Shape's new Splint Designer CAD software creates new business opportunities for dental laboratories



_3Shape recently released a ground-breaking software tool for CAD of common dental appliances, such as splints, night guards, and protectors, for fabrication using 3-D manufacturing machines and materials. 3Shape is offering this attractive option to Dental System Premium subscribers free.

3Shape, the user-acclaimed leading innovation company for 3-D scanners and CAD/CAM software solutions, has released a unique CAD software tool to the dental market that enables laboratories to provide common dental appliances as part of their range of services. The 3Shape Splint Designer is offered as an add-on module to 3Shape's Dental System. The new module offers laboratories a cost-efficient getting-started tool, and creates new business opportunities for both dental laboratories and their dentist clients.

"3Shape is continuously seeking ways to help labs compete through new service options and Splint Designer is a prime example," said Flemming Thorup, President and CEO of 3Shape. "3Shape's business model provides customers with valuable system upgrades, and this time, we are giving away a complete add-on module with high business potential to our Dental System Premium subscribers as a part of their LABcare package."

_3Shape Splint Designer overview:

_CAD of splints, night guards, protectors and similar dental appliances.
_Splints and appliances can be ordered directly through the Dental System order form.
_An intuitive workflow guides users through the design steps: open the bite with a virtual articulator, create a shell, add a bar profile on top, combine both parts, and optionally "cut" the design with the antagonists in the virtual articulators included.
_Option to engrave ID tags in the appliance for patient identification or branding of the laboratory.
_Included free of charge for all 3Shape Dental System Premium subscriptions.

The new Splint Designer module is a light version of the Appliance Designer which is 3Shape's complete CAD toolbox for all types of dental and orthodontic appliances.

Splints and appliances can be ordered directly through the Dental System order form. The 3Shape Splint Designer module is included free of charge for all 3Shape Dental System Premium subscriptions and is available with Dental System 2014 through 3Shape resellers.

Availability to end-users is dependent on the specific system configuration._

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Five-axis tabletop milling system with automated eight-fold blank changer

Fig. 1

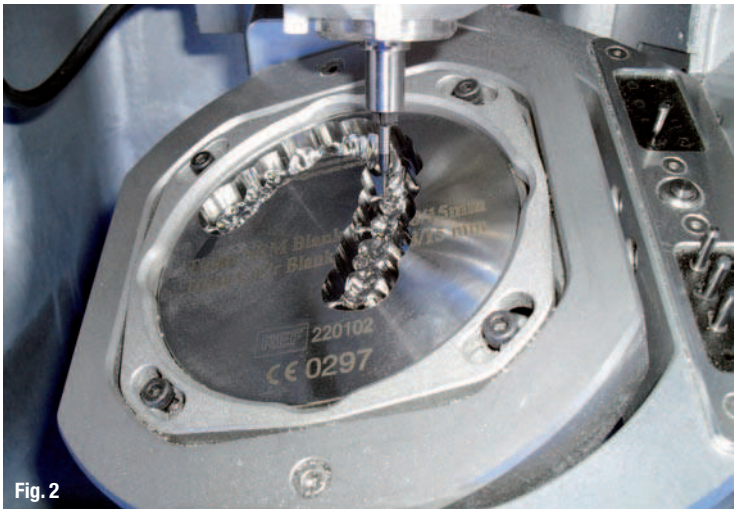
Fig. 2

Fig. 1_The automated eight-fold blank changer in Tizian Cut 5 smart plus enables the system to operate continuously.
Fig. 2_A cobalt–chromium blank being milled.
Fig. 3_Compact five-axis CNC tabletop machines Tizian Cut 5 smart and Tizian Cut 5 smart plus from Schütz Dental mill metal, zirconia, acrylics and wax.

Fig. 3

_The smart and the smart plus models are the latest in the Tizian Cut CAM family from Schütz Dental (Fig. 3). The newest hardware and software innovations in both simultaneous five-axis machines make them more precise, faster and more comfortable than any other previous Tizian Cut system.

The automatic tool changer can take up to 16 milling and grinding tools. An addition to Tizian Cut 5 smart, the Tizian Cut 5 smart plus model comes with a fully automated eight-fold blank changer (Fig. 1). Together with the tool-changing device, this allows for continuous operation. Both machines can be fitted with a tool-administration module to ensure that the user will always know when a tool needs replacing.

The Tizian Cut 5 smart milling machine is just 50 cm wide. It can master almost every milling task, almost any undercut and almost any material—even final non-precious metals. With a water-cooling system, which is available separately and retrofitted, this machine becomes a milling machine for glass ceramics. Both CNC versions can be upgraded with water-cooling system and a collecting tank. This means that lithium disilicate and zirconia-reinforced glass ceramics can be milled using the wet-machining feature.

Particularly impressive is that a machine as compact as Tizian Cut 5 smart can be used for dry machining of non-precious metals (Fig. 2). Owing to the sinter-less process, precise fitting and high quality of materials, the machine produces bridges of up to 14 units and is suitable for milling implant-supported bridges with a passive fit. The production of frameworks is precise and time saving with Tizian Creativ RT advanced CAD software: following a virtual design, the Tizian machine mills a framework from a modelling acrylic or wax. Owing to an axis angle of up to 30 degrees, undercuts can be produced seamlessly. This quick, compact all-rounder mills a three-unit metal bridge in just 50 minutes.

Tizian machines do not require licences and import open STL data._

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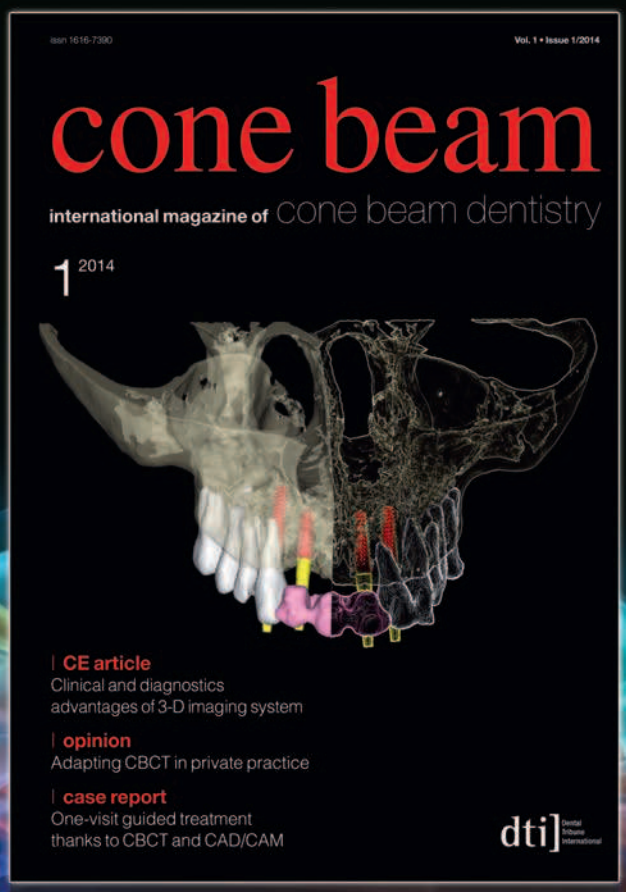

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Introducing the NobelProcera 2G System

Direct access to unrivalled products and increased productivity

Fig. 1

Fig. 1_The second-generation NobelProcera 2G Scanner is expertly engineered to the very last detail to provide greater efficiency, flexibility and precision.

_Behind all NobelProcera products is thirty years' experience in developing leading CAD/CAM dental solutions. It is this extensive expertise that Nobel Biocare utilised to develop the new NobelProcera 2G System.

For busy dental laboratories looking to expand their business, the NobelProcera 2G System is a valuable tool. The new 2G System includes updated software and an exciting new scanner, which provides direct access to high-quality prosthetic solutions through the NobelProcera global production network. Expert engineering provides the next-generation scanner with efficiency and flexibility at a level that will significantly increase a laboratory's productivity without compromising on precision. While its predecessor was recognised as extremely accurate,[1] the NobelProcera 2G Scanner offers accuracy that surpasses even this high standard.

With the NobelProcera 2G System, users benefit from direct access to prosthetic solutions that achieve an excellent functional and aesthetic outcome, whether for a single coping or an advanced full-arch implant case. Plus, with direct local product support providing training for both dental laboratories and their restorative dentist customers, the NobelProcera 2G System helps facilitate stronger relationships between professionals, enabling them to grow their business by offering improved treatment to more patients.

Ease of use was a priority in developing the 2G System, which took into account valuable feedback from first-generation NobelProcera Scanner users. While the new system may resemble the original in appearance, the efficiency of the 2G version is noticeably superior. Existing NobelProcera Scanner users can also benefit from improved ease of operation through Nobel Biocare's exchange programme, which makes it easy to upgrade to the 2G System.

Fig. 2

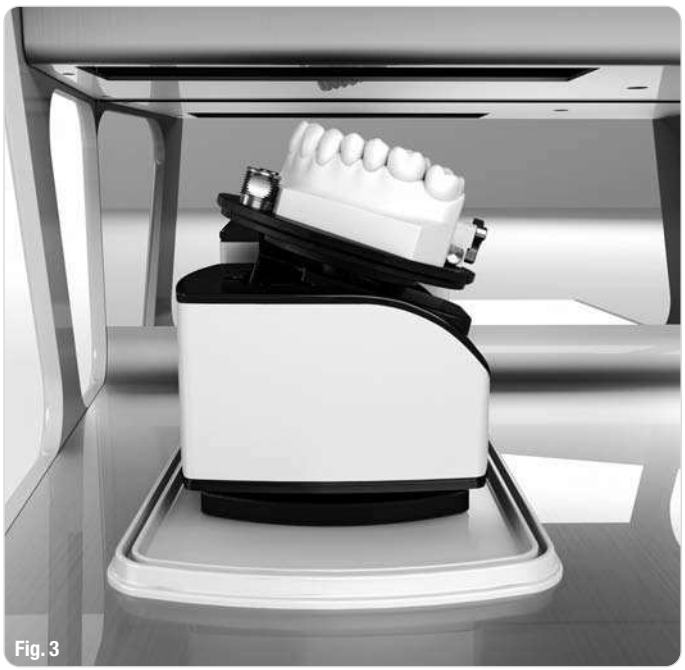

Fig. 3

_Smarter positioning; greater productivity

Vital to increasing productivity is the introduction of the Smart Motorized Holder, with which objects to be scanned are easily secured using magnets. Moving independently, the holder automatically positions each object on the model at the ideal height, tilt and rotation.

Efficiency is increased by reducing the need for user interaction while improving the scanning range. Additional new workflow options, such as articulated model scanning, have therefore also been introduced. The result is optimal scan data that enables consistency with less manual operation. This is the case even for difficult scanning situations, such as undercuts, freeing up technicians to focus on tasks that offer the most value to their laboratory.

_Predictably precise results

The NobelProcera 2G System makes it easier for dental professionals to process larger and more complex cases with confidence. The user is also offered the flexibility to control scanning and to add additional scan data at any stage of the process. This means predictably high-quality prostheses for every customer.

_A next-generation scanner for the workflow of the future

The NobelProcera 2G System will play a crucial role in Nobel Biocare's new seamlessly integrated treatment workflow, which will be introduced this year. This digital workflow brings together the latest innovations at each stage of the treatment process over the secure online NobelConnect network and is supported by leading diagnostics and treatment planning software NobelClinician.

The current standard procedure is for a clinician to take an initial impression, which is sent to a laboratory for the creation of a radiographic guide. With the NobelProcera 2G System, the radiographic guide is no longer needed, lowering the cost for the clinician and increasing flexibility. Instead, the laboratory can add further value as a treatment partner by providing intra-oral model surface information that assists with the clinician's diagnostic treatment plan. Thanks to its solid model scanning capability, the 2G Scanner delivers a model scan with intra-oral surface information, such as soft tissue and diagnostic tooth set-up. This can be combined with a patient's CBCT scan via smart fusion technology in NobelClinician. The result is an accurate diagnostic picture displaying both soft- and hard-tissue information for the clinician without a radiographic guide, saving precious time for both dental professional and patient.

Fig. 4

With vital diagnostic information directly from the laboratory, dental technicians are able to discuss their restorative considerations with the clinician at an early stage. Such a collaborative approach improves implant diagnostics and therefore the overall treatment outcome, reducing the likelihood of prosthetic challenges.

In the next step, based on the post-operative situation, individualised CAD/CAM prostheses are easily designed in the NobelProcera software and then ordered digitally from NobelProcera's integrated global production network. The end-product is a precisely manufactured restoration of outstanding quality that comes with a certificate of authenticity and an extensive warranty.

In summary, the NobelProcera 2G System offers an evolutionary scanner that provides next-gen - eration results. It offers laboratories increased productivity, precision and collaboration with clinicians. The benefits of the system enable laboratories to build their business and make the investment worthwhile._

Fig. 2_The NobelProcera 2G Scanner offers easy placement of all objects to be scanned owing to the new Smart Motorized Holder with magnets.
Fig. 3_The new table with a Smart Motorized Holder positions each object on the model at the ideal height, tilt and rotation for optimal scan data.
Fig. 4_The 2G System is vital to Nobel Biocare's fully integrated digital treatment workflow, allowing laboratories to collaborate more closely with clinicians at the treatment planning stage.

_References

1. S. Holst et al., Digitizing implant position locators on master casts: Comparison of a noncontact scanner and a contact-probe scanner, *International Journal of Oral and Maxillofacial Implants*, 27/1 (2012): 29–35.

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